BLANKOM®

Professional Headend Solutions

User manual

Network Management Software
for DVB Multiplexer MXA 107, MXA 108 & DVB Scrambler SCA 107

Network Management Software

...Setting Signals

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1. Introduction

The BLANKOM Network Management Software (NMS) allows remote access and configuration of the MXA 107 & MXA 108 DVB Multiplexer and the SCA 107 DVB Scrambler.

2. General operation

2.1 General network configuration

The IP Address of each device should be configured through its front panel to allow it to communicate with the BLANKOM Network Management Software (see 3.1 - 3.4).
The default IP Address is set as 192.168.2.90.
The address of the network connection at the computer must be adapted to the IP address of the respective device (subnet mask: 255.255.255.0, IP address: 192.168.2.XXX, where XXX is not the same as the corresponding value of a IP address of an other device in the network).

2.2 Login

To start the BLANKOM Network Management Software double click on the applications icon. The following menu will be shown when the BLANKOM Network Management application is started :

Fig. 1

The default settings for the username and password are as follows:

UserName = admin
PassWord = admin

Note: The username and password settings are case sensitive.

2.3 Auto register

The username and password settings can be stored for automatic login simply by activating the “Auto Register“ option.

2.4 Startup

The following menu will be displayed when the BLANKOM Network Management application has been started after a successful login:

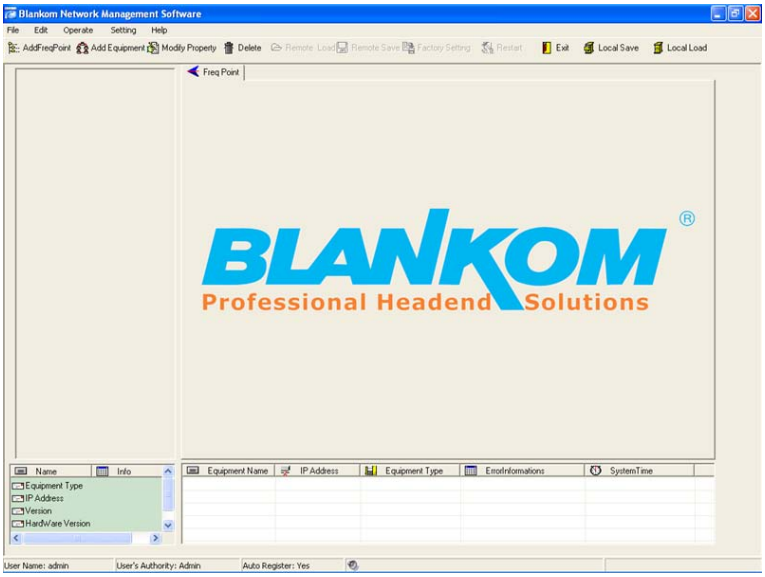

Fig. 2

2.5 Drop down menus

The drop down menus at the top of the application are used to activate the main application functions.

2.5.1 File menu

Option	Keyboard Shortcut	Function
OPEN	CTRL + A	Reads the settings from the selected configuration file
SAVE	CTRL + S	Saves the settings to the selected configuration file
SAVE AS	CTRL + B	Saves the device settings under a new configuration file name
EXIT	CTRL + X	Exit the NMS application

2.5.2 Edit menu

Option	Keyboard Shortcut	Function
ADD FREQ POINT	CTRL + E	Allows a freq point (e.g. a new head end) to be added
ADD DEVICE	CTRL + D	Allows a device to be added
EDIT DEVICE	CTRL + F	Allows devices access parameters to be edited
DELETE DEVICE	CTRL + G	Allows a device to be deleted
DELETE ALL	CTRL + H	Deletes all devices of a freq point (e.g. head end)

2.5.3 Operate menu

Option	Keyboard Shortcut	Function
REFRESH DEVICE	CTRL + I	Refreshes the view for the device selected
FACTORY SETTING	NONE	Restores the device settings to the factory defaults
STOP OPERATE	CTRL + J	Stops the operation of a device

2.5.4 User setting menu

Option	Keyboard Shortcut	Function
USER SETTING	NONE	Allows the user to create new users and change passwords
SYSTEM SETTING	NONE	Allows the user to alter the name and background shown on the application

2.6 Options toolbar (requires software changes)

The options toolbar shows additional functions that are available in the application.

Fig. 3

Option	Function
Add Freq Point	Allows the user to add a freq point (e.g. head end)
Add Device	Allows the user to add a new device the system
Modify Property	Allows the user to modify a devices access properties (name, IP address & port)
Delete	Allows the user to delete a device or a freq point
Remote Load	Allows the user to load the settings from a selected device
Remote Save	Allows the user to save the settings to a selected device
Factory Setting	Allows the user to reset the selected device to the factory defaults
Restart	Allows the user to restart the selected device
Exit	Allows the user to exit the application
Local Save	Allows the user to save the settings locally in a file
Local Load	Allows the user to load the local settings from a file

2.7 Error menu

This menu is found at the bottom right hand side of the application and shows any communications errors with the equipment that has been configured.

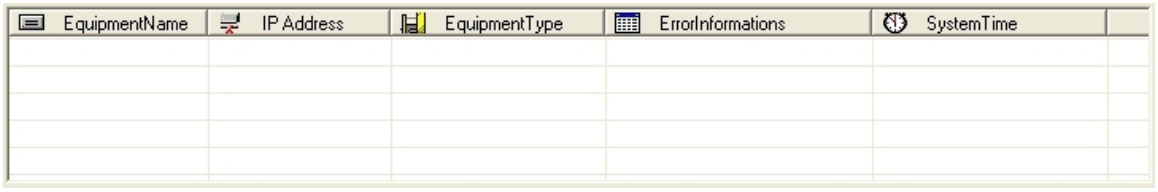

Fig. 4

Note: Any errors shown should be investigated.

2.8 Parameters menu

This menu is found at the bottom left hand side of the application and shows the configuration parameters for the device currently selected.

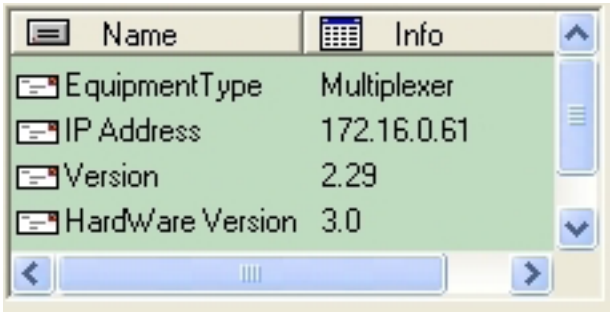

Fig. 5

2.9 Freq Point

2.9.1 Adding a freq point

Select “AddFreqPoint“ option. A menu similar to the following will be shown:

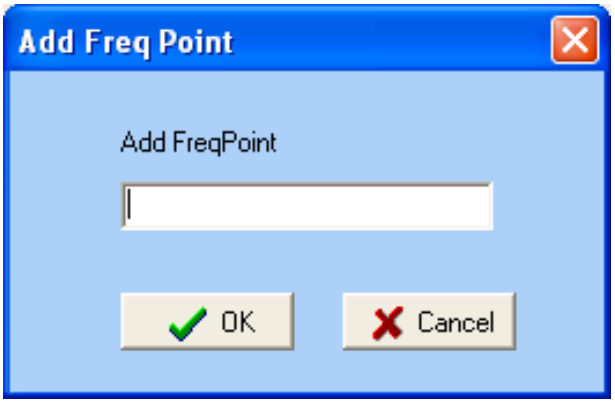

Fig. 6

Enter the details as required i.e. head end as shown in the menu below:

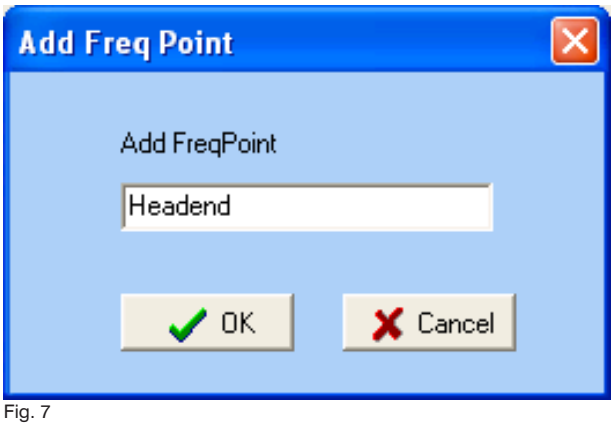

Fig. 7

Select the “OK“ button.

The freq point has now been added and should be shown in the application:

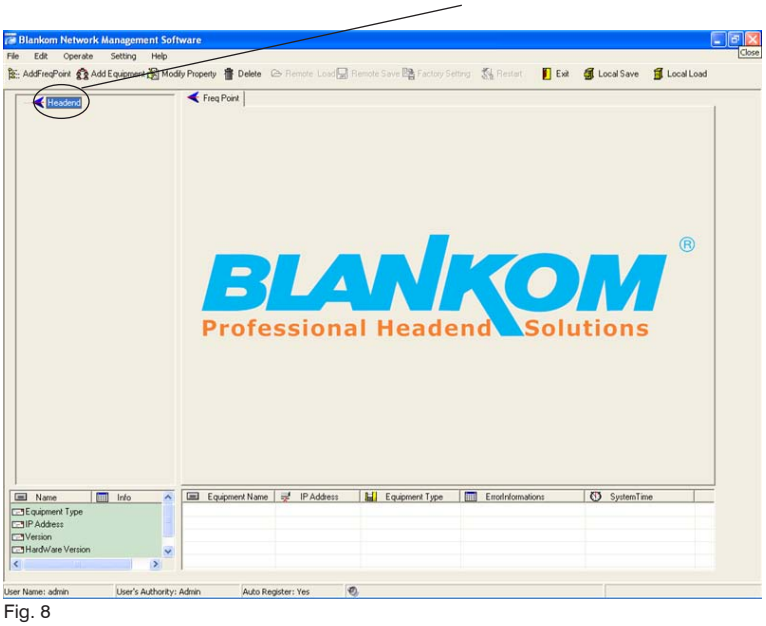

Fig. 8

2.9.2 Modify a freq point

Select the freq point to be modified. Select the “Modify Property“ option. A menu similar to the following will now be shown:

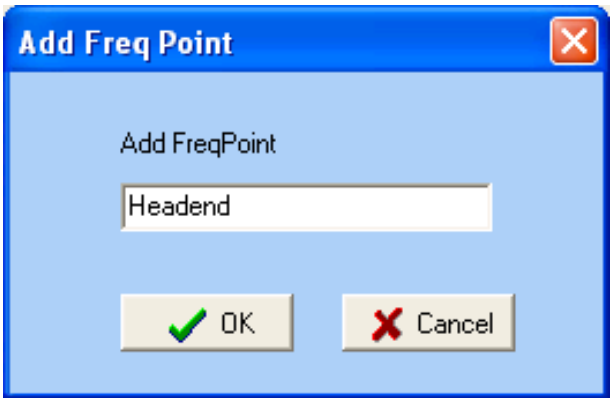

Fig. 9

Enter the new details as required and select the “OK“ button. The selected freq point will now be modified as required.

2.9.3 Deleting a freq point

Select the freq point to be deleted. Select the “Delete“ option.
The selected freq point will now be deleted.

3. MXA 107 & MXA 108 DVB Multiplexer

3.1 Adding a multiplexer

Select the “Add Equipment“ option. A menu similar to the following will now be shown.

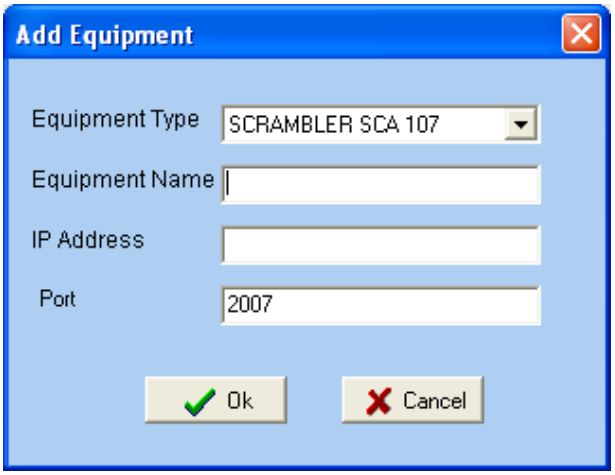

Fig. 10

Select the ‘Multiplexer’ option in the equipment type section.
Enter identification name for the multiplexer.
Enter the IP address of the multiplexer.
Port number must be the same as the multiplexer (default is 2007)
The menu should now look similar to the following.

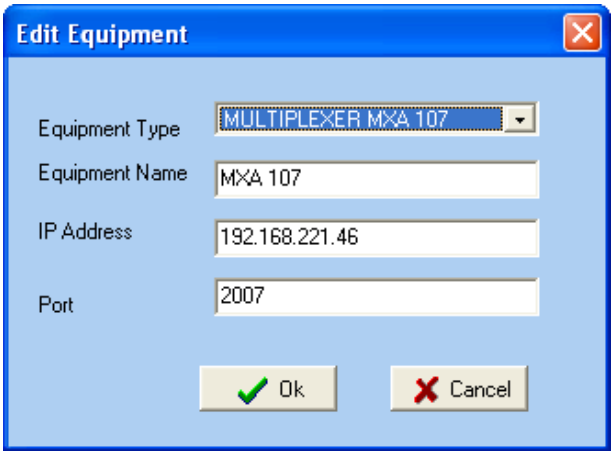

Fig. 11

Select the “OK“ option. The multiplexer will now be added to the application.

If the NMS can connect with the multiplexer through the IP address given, then the following screen will be shown where a green indicator is shown for this device:

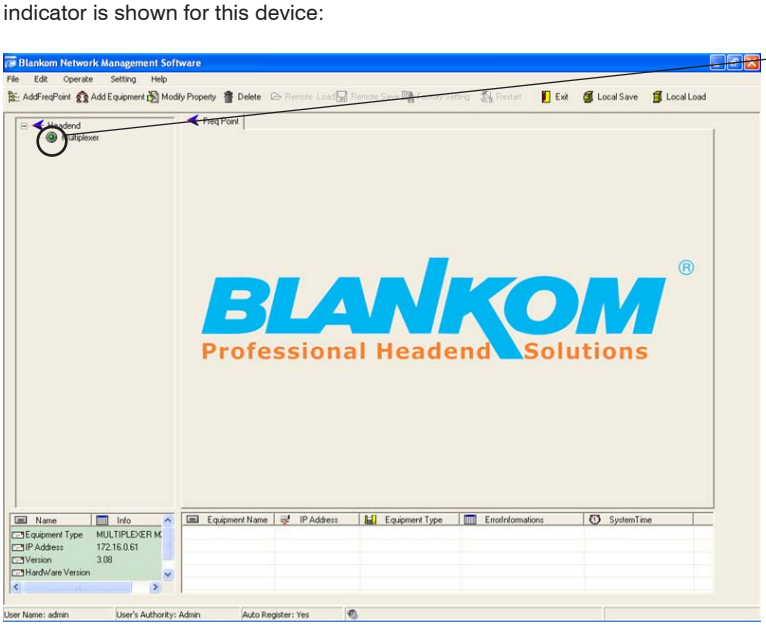

Fig. 12

If the NMS cannot connect with the multiplexer through the IP address given, then the following screen will be shown where a red indicator is shown for this device:

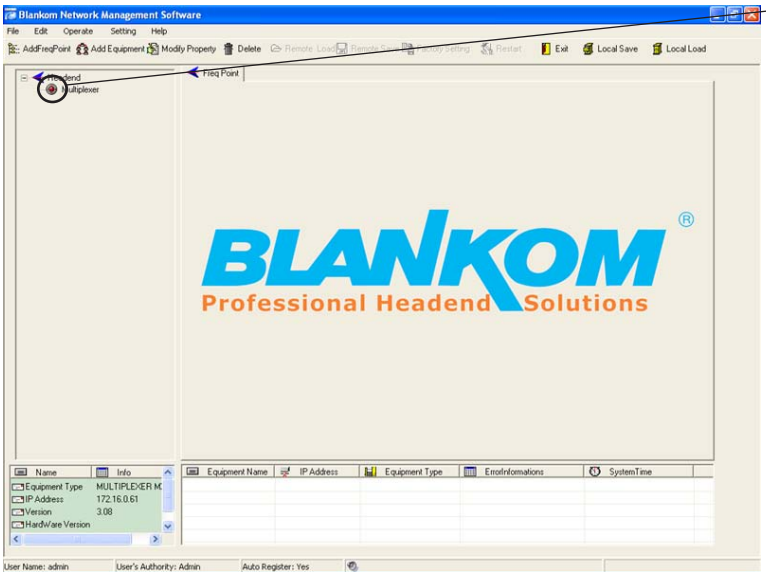

Fig. 13

If there is no connection shown, then please check the configuration of the device and the network connecting the multiplexer to the Network Management Console.

3.2 Modify multiplexer settings

Select the multiplexer that is required to be modified and then select the “Modify Property“ option (see 2.5.2 and 2.6). A menu similar to the following will be shown, including the various settings for the selected multiplexer.

.

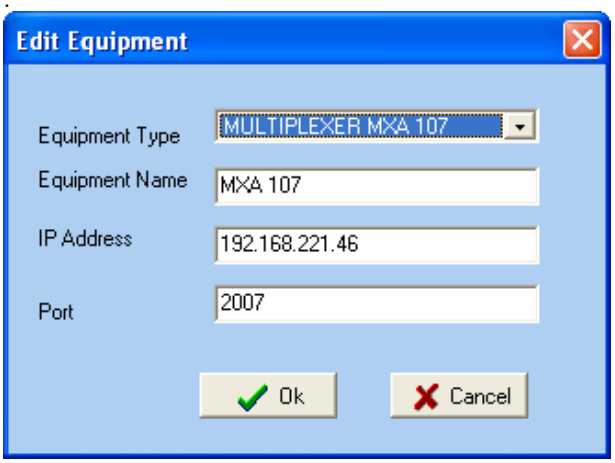

Fig. 14

Modify the settings as required and then select the “OK“ button. The modified settings will now be saved.

3.3 Channel parameters menu

3.3.1 View input port contents

Select the multiplexer as required. Select the “CH Parameters“ tab and then the “Input Information“ section:

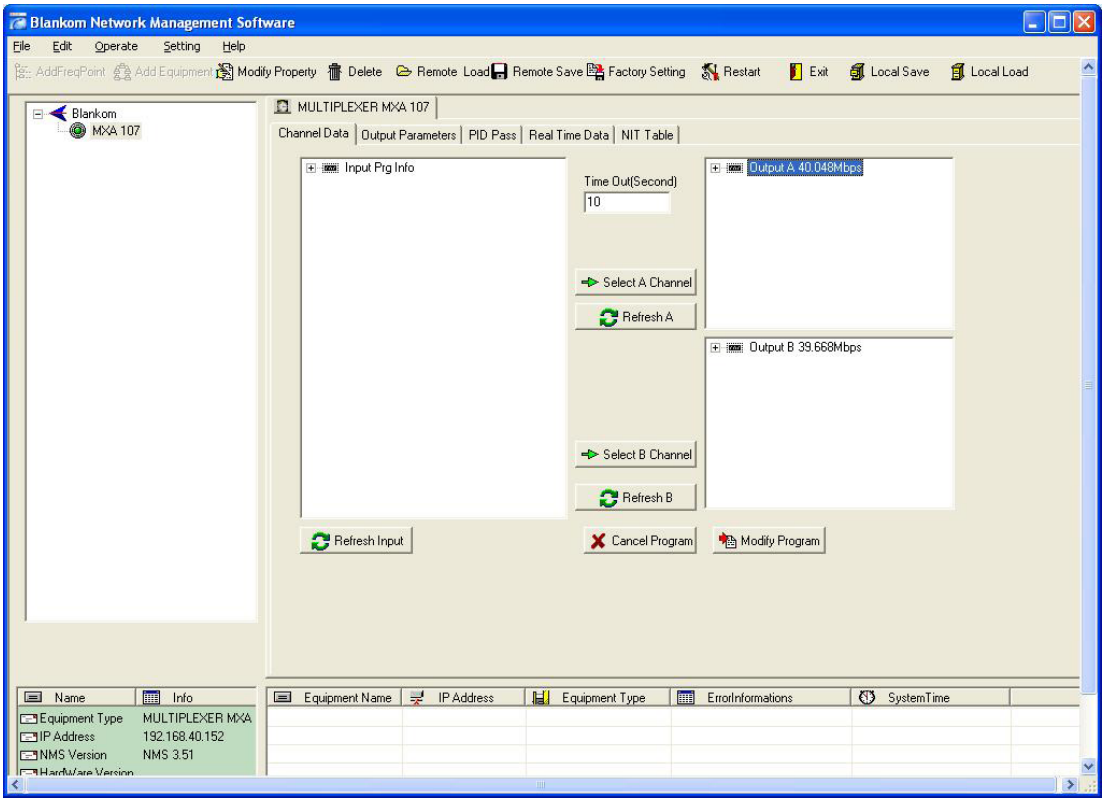

Fig. 15

Expand the “Input Information“ section to show all 8 (MXA 107) respective 12 (MXA 108) input ports and select the port as required.

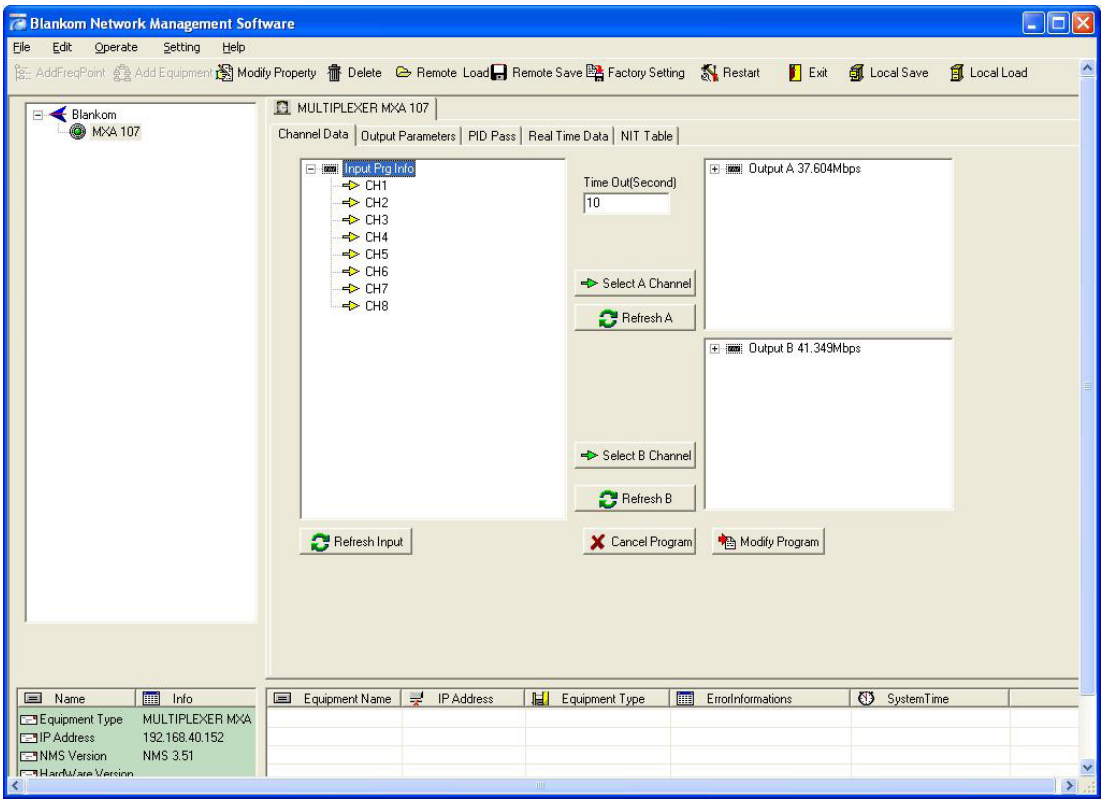

Fig. 16

Select the accurate “Input“ button (MXA 107: CH1....CH8, MXA 108: CH1..CH12). The multiplexer will now interrogate the input port selected and then show its contents in the “Input“ Information’ section.

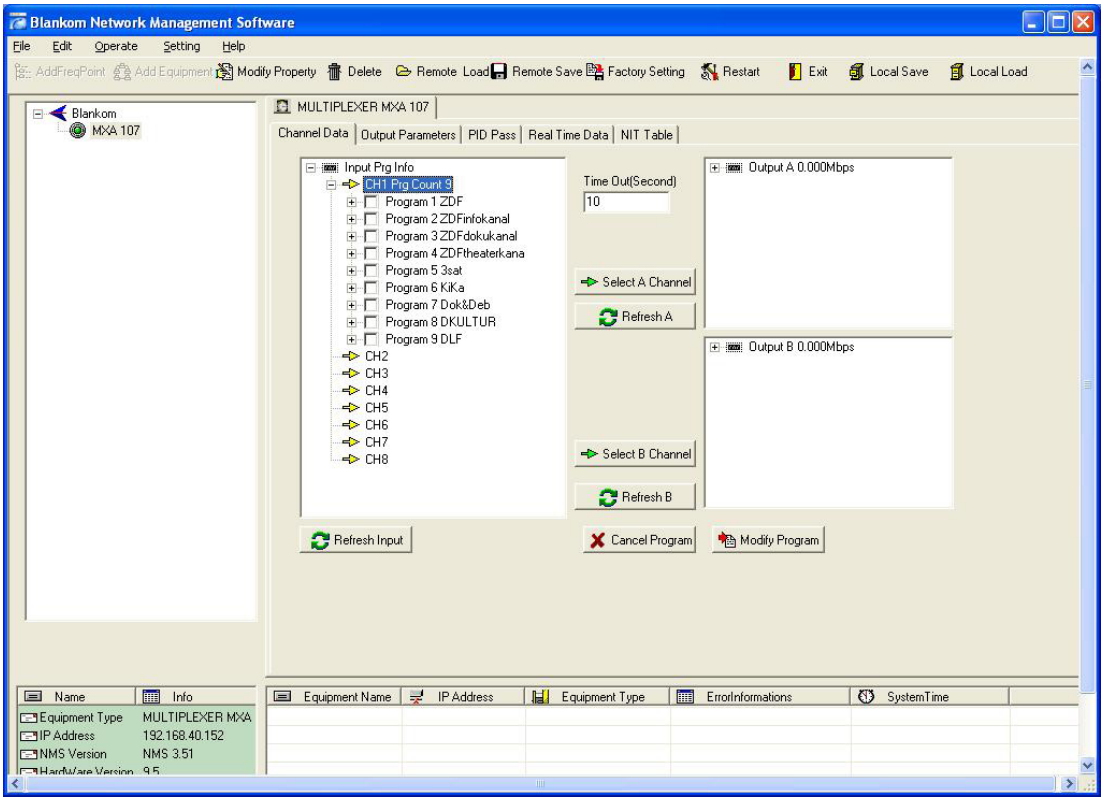

Fig. 17

The specific details for the port can be shown by expanding each port as required or by selecting the appropriate “Layer“ option.

Layer 1 – Shows the input ports and their status.

Layer 2 – As with Layer 1, but also shows the programs contained within each port and their status.
(tick – allocated to output port, no tick – not allocated to output port)

Layer 3 – As with Layer 2, but also shows the program and PID details for each program.

IMPORTANT NOTICE
All executed adjustment are permanently saved only after command “remote saved“. Without “remot save“ all adjusted and/ or changed parameters are no longer available after restart.

3.3.2 View output port contents

Select the multiplexer as required. Select the “CH Parameters“ tab and then the “Output Information“ section.

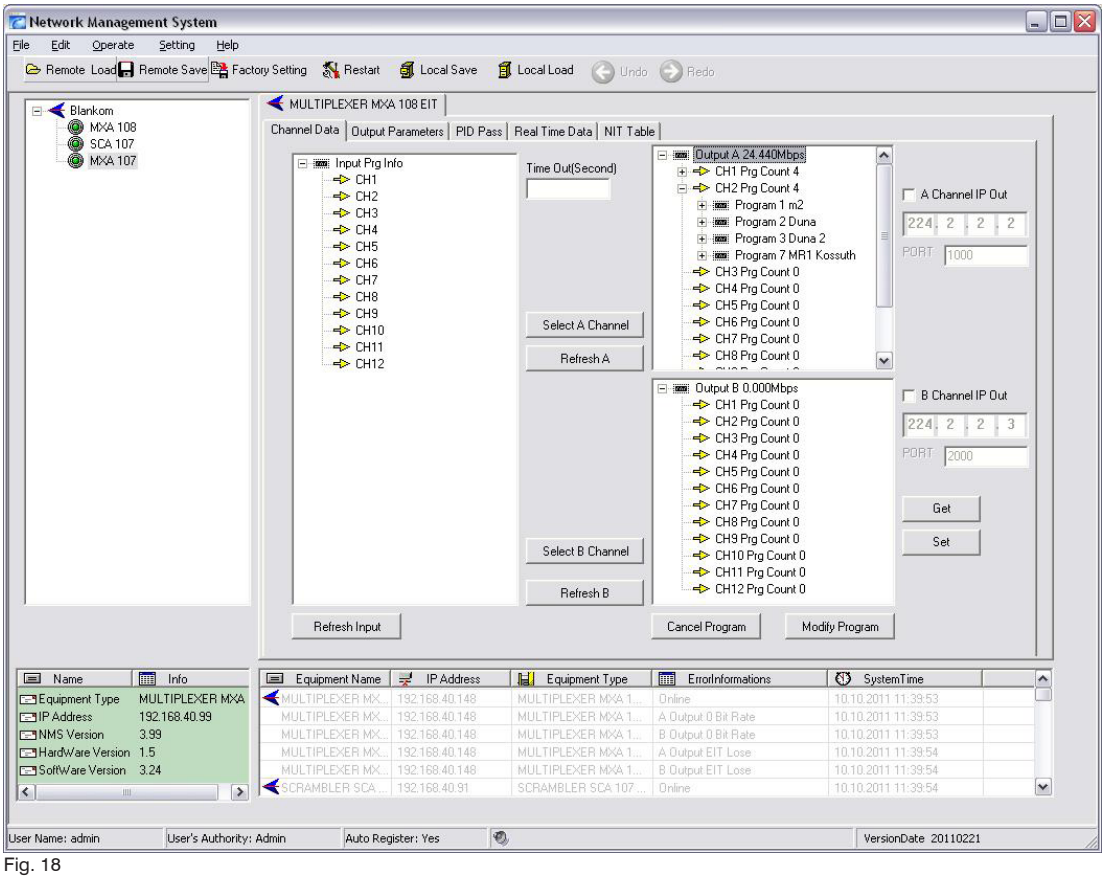

Fig. 18

Select the “Output“ button

The multiplexer will now interrogate the output port selected and then show its contents in the “Output Information“ section.

The specific details for the port can be shown by expanding each port as required or by selecting the appropriate “Layer“ option.

Layer 1 – Shows the output ports and their status.

Layer 2 – As with Layer 1, but also shows the programs contained within each port and their status.
(tick – allocated to output port, no tick – not allocated to output port)

Layer 3 – As with Layer 2, but also shows the program and PID details for each program.

With the MXA 108 can be transferred the program package applied at the respective output (A or B) via IP additionaly. For this purpose is to mark the appropriate box and specify the multicast IP address and the port. It should be noted that the package will be issued with the registered output data rate (see section 3.4.1).

3.3.3 Adding a channel to the output

Select the channel that is required to be added to the output port.

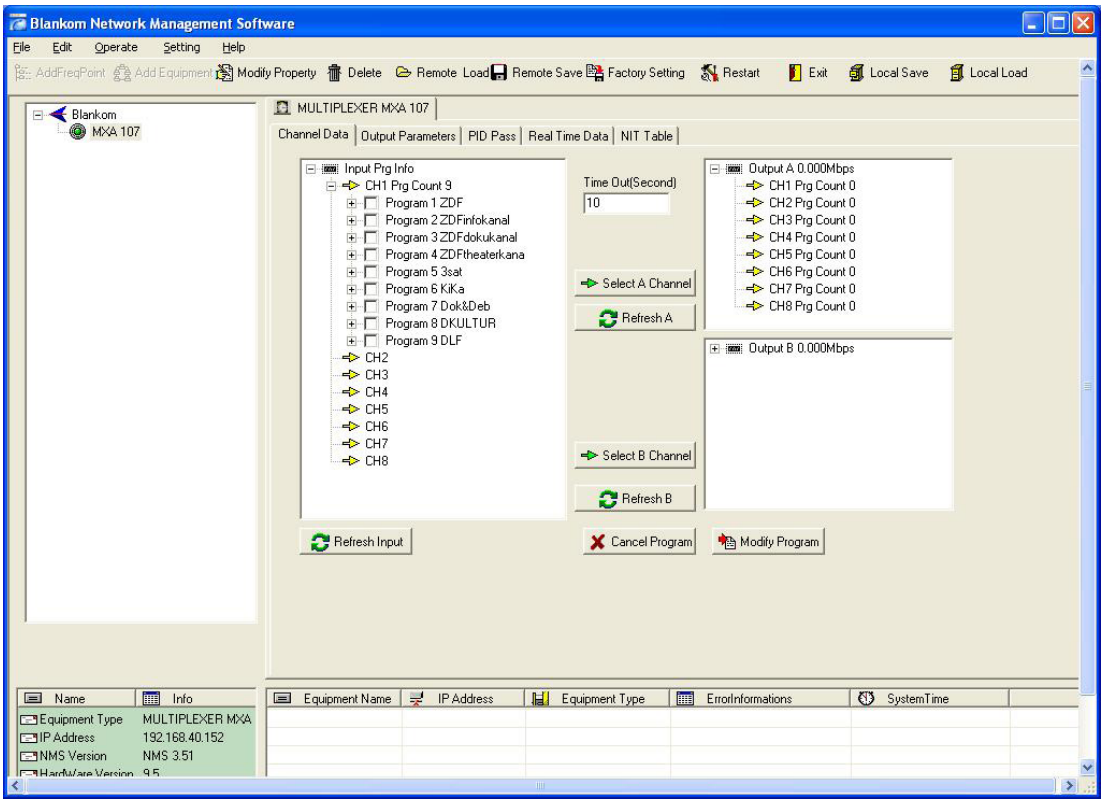

Fig. 19

Select the “Select A Channel“ or “Select B Channel“ button to transfer this program to the output A or output B.

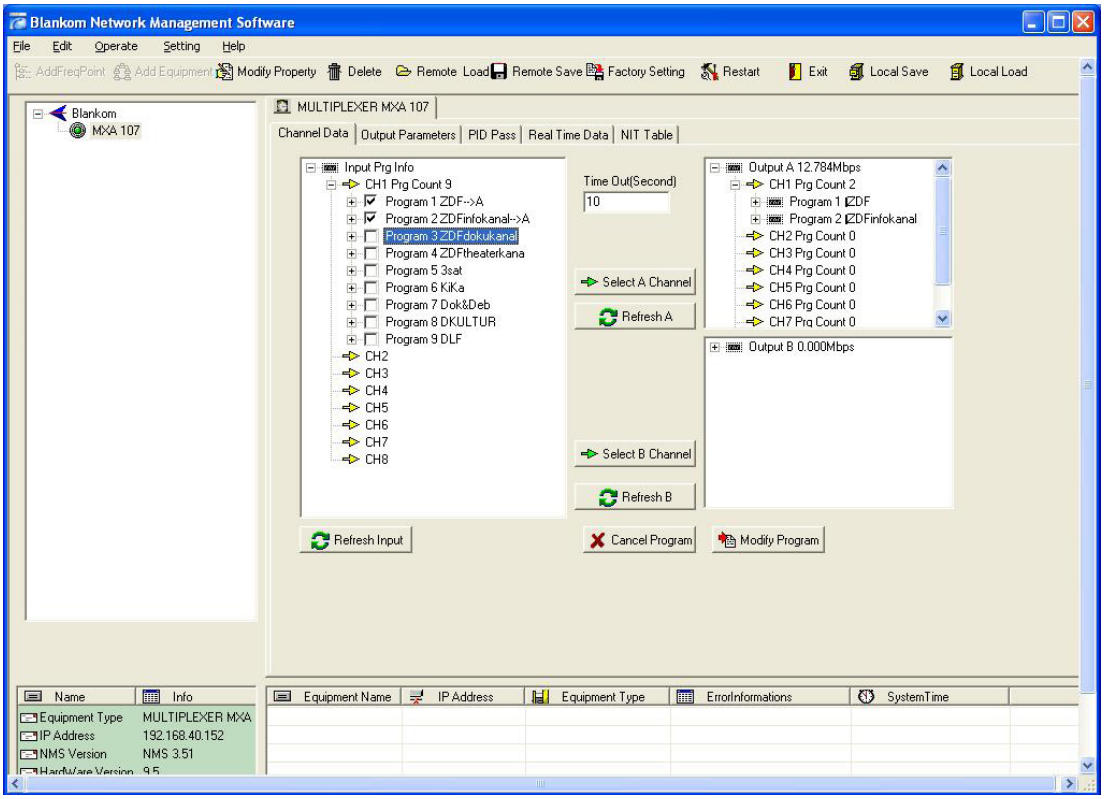

Fig. 20

Select the “Remote Save“ button to upload these changes to the multiplexer.

3.3.4 Removing a channel from the output

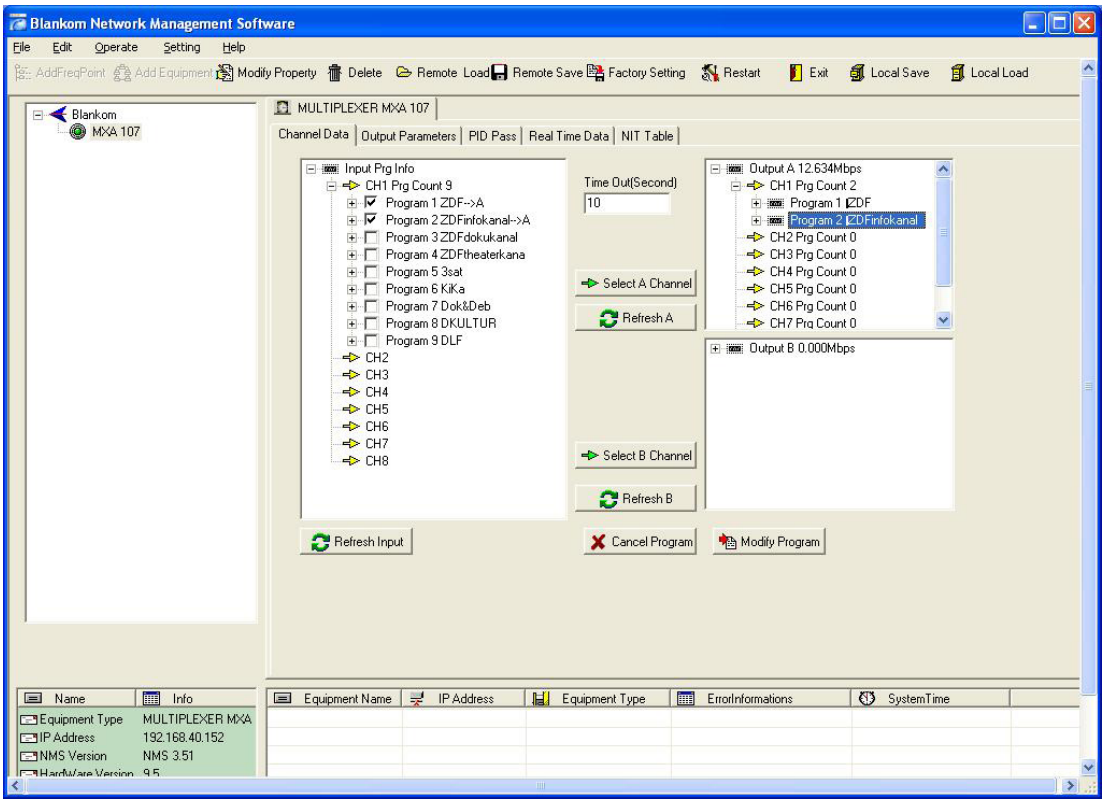

Fig. 21

Select the “Cancel“ button to remove this channel from the output.
Select the “Remote Save“ button to upload these changes to the multiplexer.

3.3.5 Editing the details of a channel configured on the output

Select the channel to be edited.

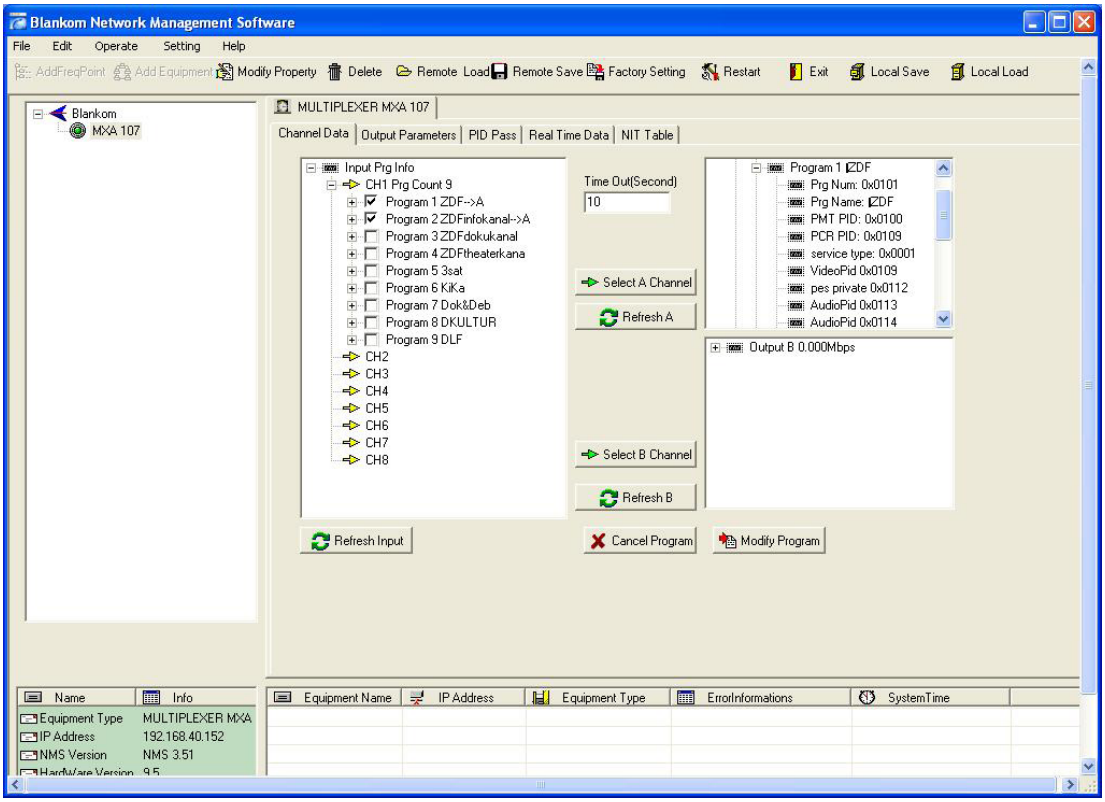

Fig. 22

Select the “Modify Program“ button. A menu similar to the following will be shown:

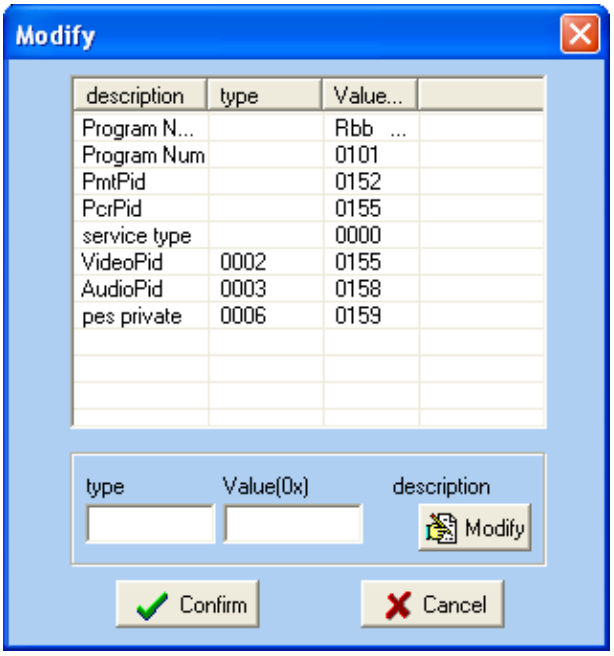

Fig. 23

Edit the various parameters as required and then select the “Confirm“ button.
Select the ‘Remote Save’ button to upload these changes to the multiplexer.

3.4 Output parameters menu

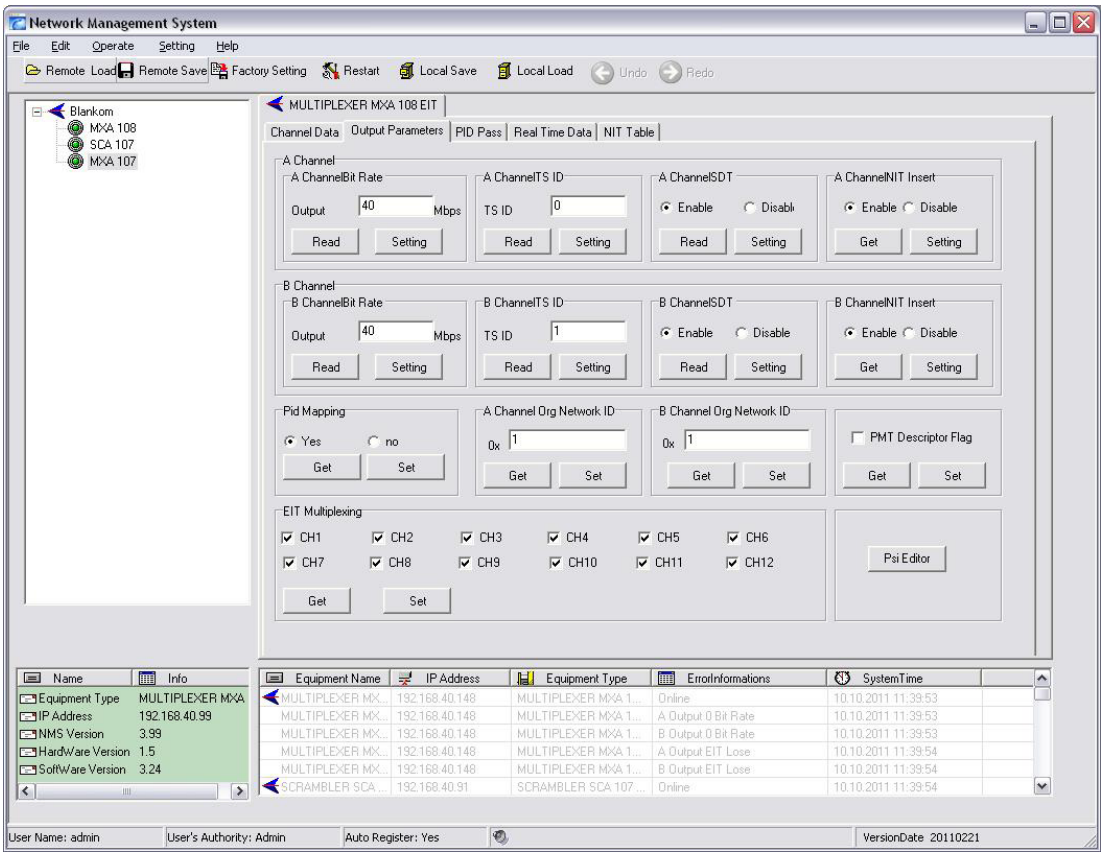

Fig. 24

Applies to the processing of output parameters:

Getting the current device parameter → press “Read“ button
Transmission of the modified device parameter → press “Setting“ button

3.4.1 Output stream data rate

This parameter is used to set the maximum data rate for the multiplexers output (maximum 108 Mbps).

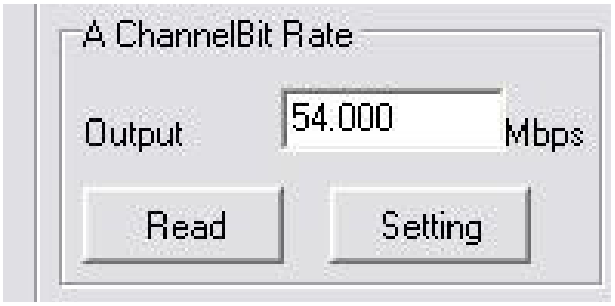

Fig. 25

3.4.2 Transport stream ID

This parameter is used to set the “Transport Stream ID“ of the multiplexer output (hexadecimal).

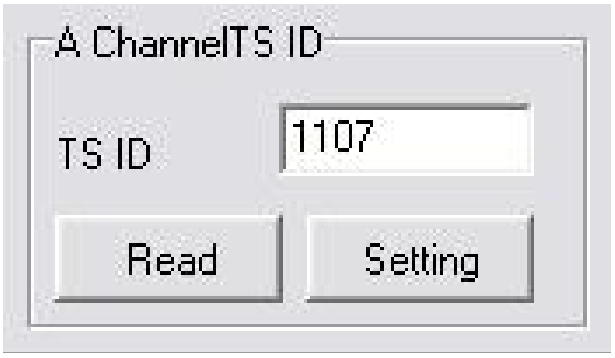

Fig. 26

3.4.3 SDT (Service description table)

This parameter is used to configure whether the Service Description Table (SDT) is transmitted.

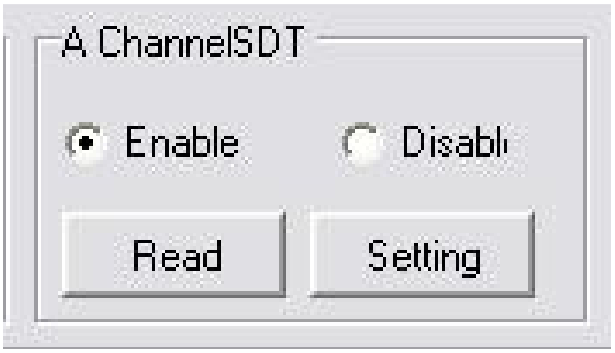

Fig. 27

3.4.4 NIT (Network information table)

This parameter is used to enable or disable the NIT insert.

Fig. 28

3.4.5 PID mapping

This parameter is used to enable or disable the PID mapping.

Yes → PID's are changed
No → PID's are unchanged

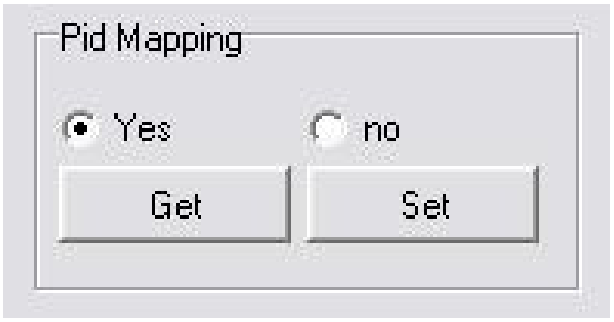

Fig. 29

3.4.6 Org. Network ID

This setting allows the input of each org. Network ID. The input is hexadecimal.

Fig. 30

3.4.7 PMT Descriptor Flag

This setting allows the setting of the PMT descriptor flags and the reading of the adjusted state. If the box is not ticked, the CA descriptor in the PMT will be removed.

Fig. 31

3.4.8 EIT Multiplexing

Here you can specify which channels are included in the EIT with multiplexing.

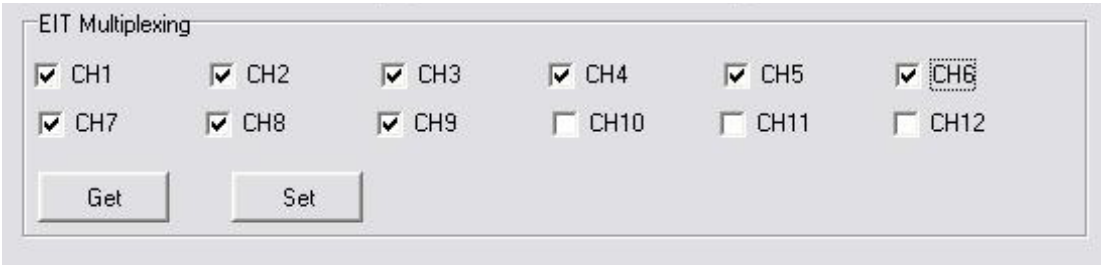

Fig. 32

3.4.9 PSI Editor

Here the data are forwarded to the PSI editor.

Fig. 33

Selection → „Remote Save“ button → changes are saved

3.5 Real time data tab

The Real time data tab shows the current status of the multiplexers output port.

yellow → output A
green → output B

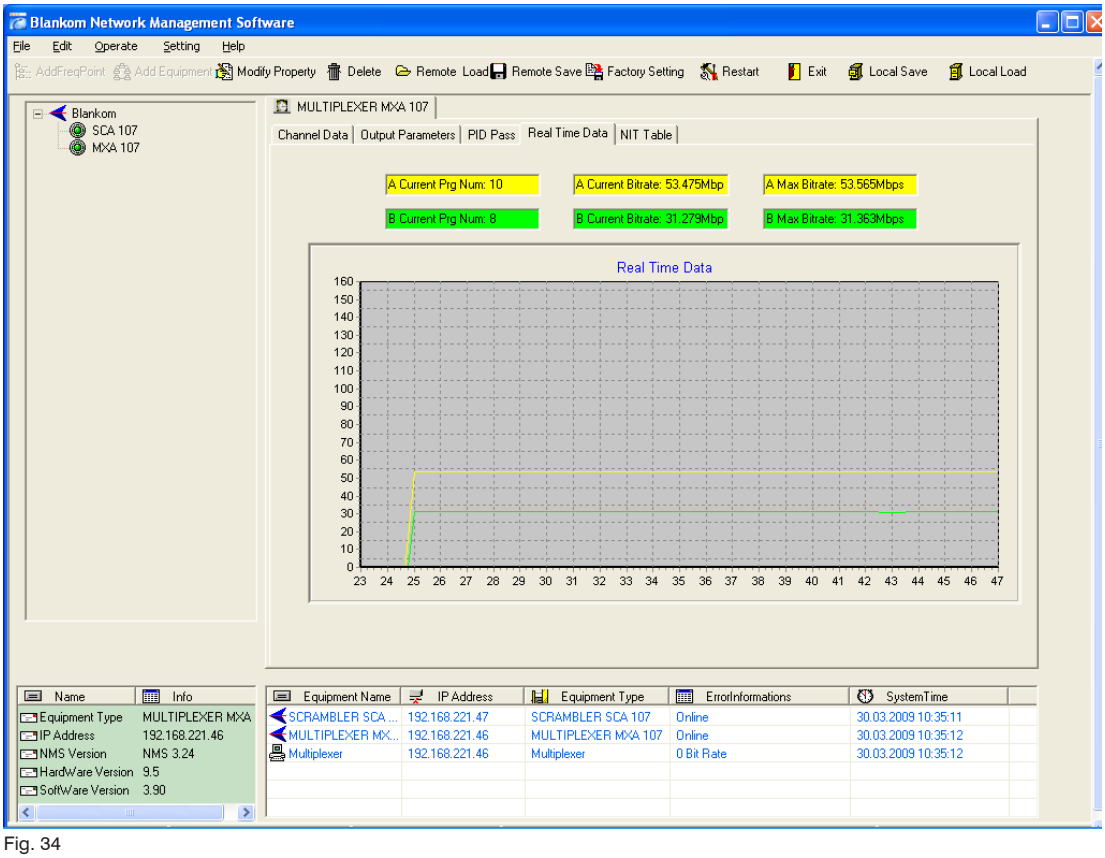
Blankom Network Management Software
File Edit Operate Setting Help
AddFreqPoint Add Equipment Modify Property Delete Remote Load Remote Save Factory Setting Restart Exit Local Save Local Load
Blankom
SCA 107
MXA 107
MULTIPLEXER MXA 107
Channel Data Output Parameters PID Pass Real Time Data NIT Table
A Current Prg Num: 10
A Current Bitrate: 53.475Mbp
A Max Bitrate: 53.565Mbps
B Current Prg Num: 8
B Current Bitrate: 31.279Mbp
B Max Bitrate: 31.363Mbps
Real Time Data
160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47
Name Info
Equipment Type MULTIPLEXER MXA
IP Address 192.168.221.46
NMS Version NMS 3.24
HardWare Version 9.5
SoftWare Version 3.90
Equipment Name IP Address Equipment Type ErrorInformations SystemTime
SCRAMBLER SCA ... 192.168.221.47 SCRAMBLER SCA 107 Online 30.03.2009 10:35:11
MULTIPLEXER MX... 192.168.221.46 MULTIPLEXER MXA 107 Online 30.03.2009 10:35:12
Multiplexer 192.168.221.46 Multiplexer 0 Bit Rate 30.03.2009 10:35:12

Fig. 34

Parameter	Function
Current PrgNum	Shows the number of programs allocated to the output of the MUX.
Current Bit Rate	Shows the current output bit rate
Max. Bit Rate	Shows the maximum used bit rate seen on the output of the multiplexer

3.6 NIT parameters tab

The NIT parameters tab allows the user to configure the NIT parameters as required.

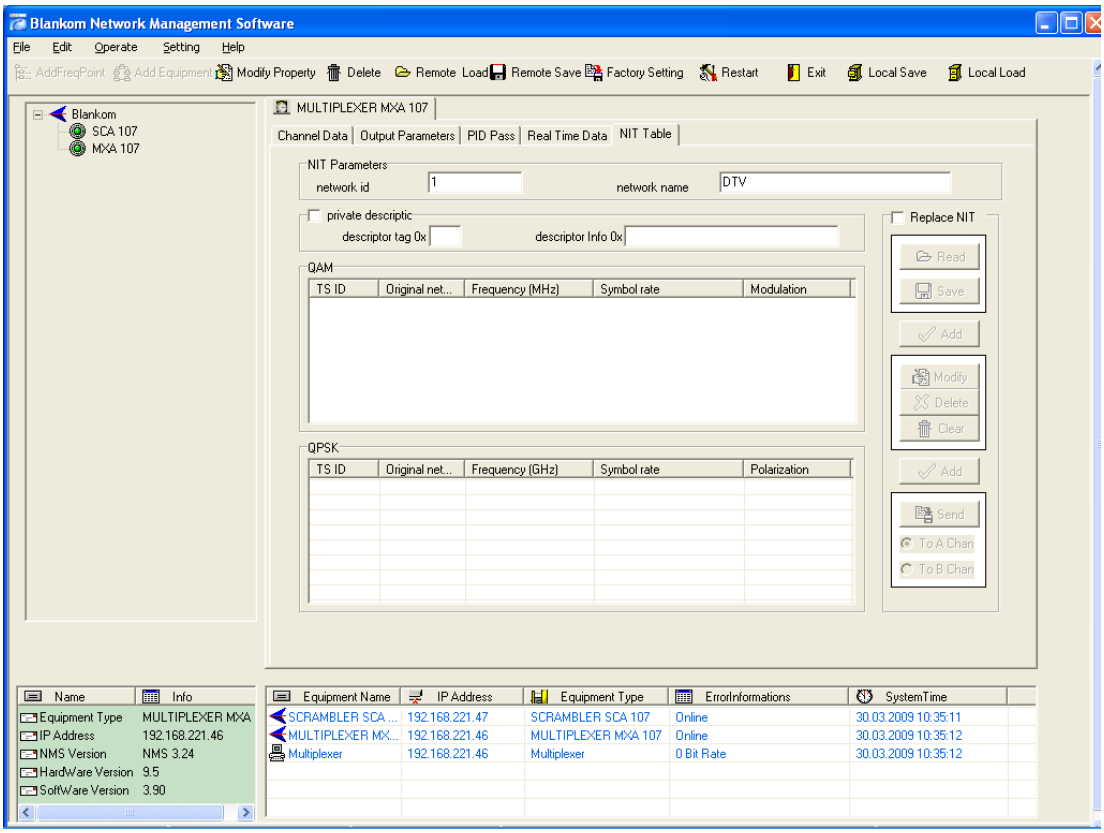

Fig. 35

3.7 PID pass tab

The “PID Pass“ feature allows you to loop through the PSI/ SI tables. The multiplexer transmits by default, not all tables (eg CAT, EIT, TDT/ TOT). These can be transferred via the “PID Pass“ feature.

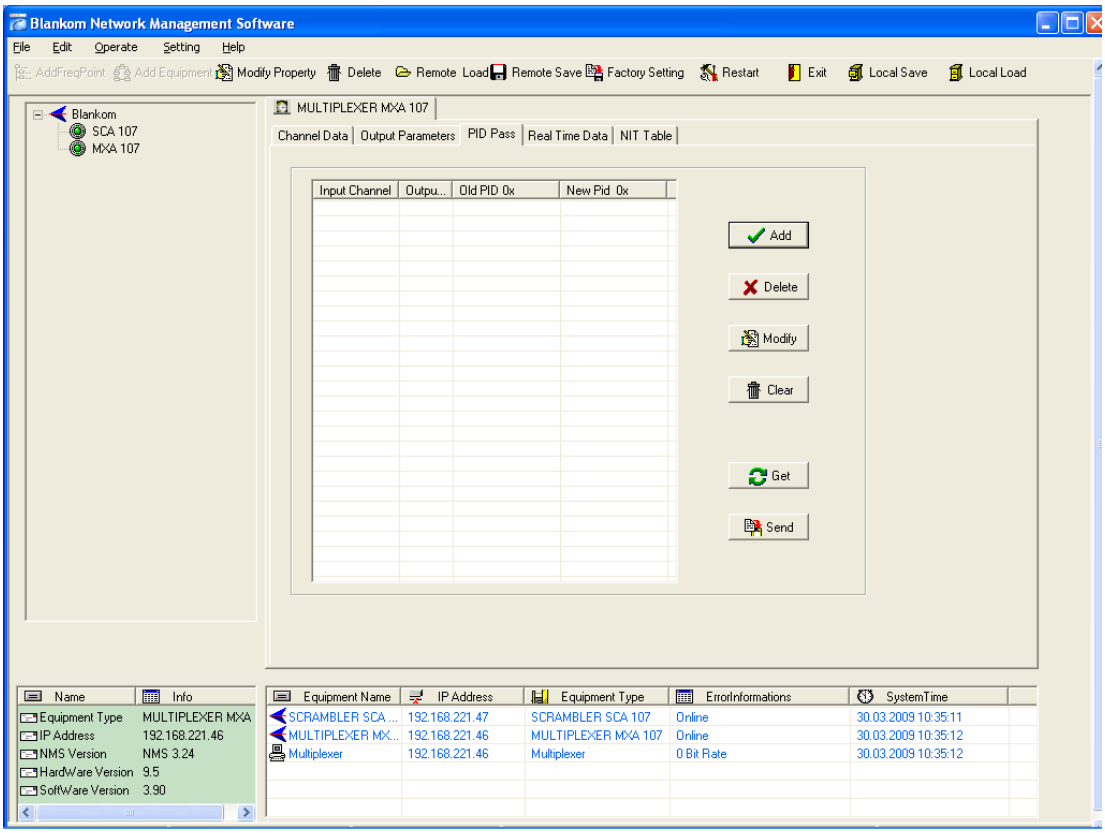

Fig. 36

Getting the current device parameter → “Get“ button
Transmission of the modified device parameter → “Send“ button

Selection → “Remote Save“ button → changes are stored in the multiplexer

3.7.1 Add

This option allows the user to create a new PID reallocation setting. A menu similar to the following will be shown when this option is selected.

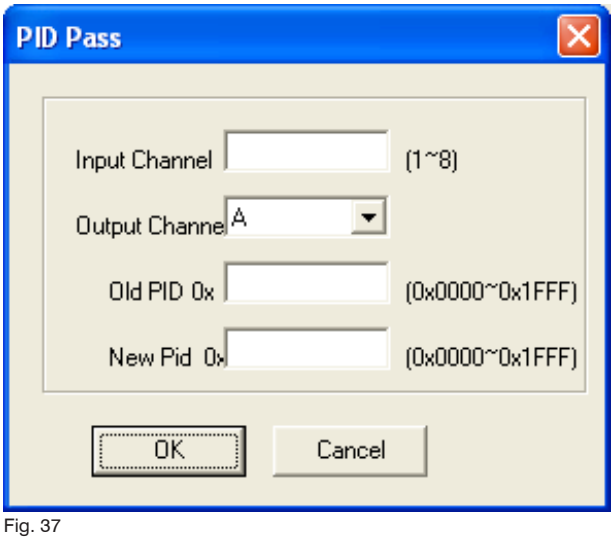

Fig. 37

Enter the channel number, select the output channel, old PID (in HEX) and new PID (in HEX) as required, then select the “OK“ button. Now select the “Send“ option to upload this reallocation to the multiplexer.

The PID allocation is subject to the DVB standards. Double PID awards are to be avoided.

3.7.2 Delete

Delete option → selected entry is deleted

3.7.3 Modify

Modify option → edit a selected entry

3.7.4 Clear

Clear option → ALL entries will be deleted

3.7.5 Get

Get option → Parameters are loaded from the multiplexer

3.7.6 Send

Send option → Parameters are transmitted to the multiplexer

4. SCA 107 DVB Scrambler

4.1 Adding a scrambler

Select the “Add Equipment“ option. A menu similar to the following will now be shown:

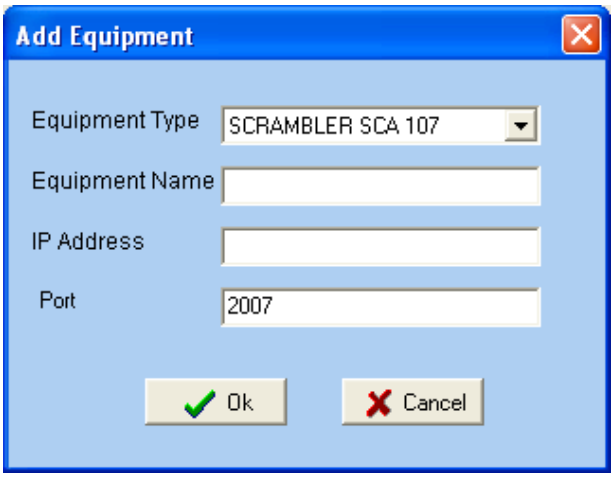

Fig. 38

Select the “Scrambler SCA 107“ option in the equipment type section.
Enter identification name for the scrambler.
Enter the IP address of the scrambler.

The menu should now look similar to the following:

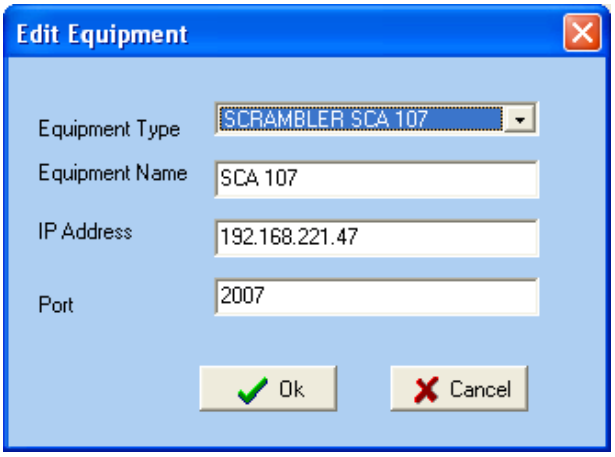

Fig. 39

Select the “OK“ option. The scrambler will now be added to the application.

If the NMS can connect with the scrambler through the IP address given, then the following screen will be shown where a green indicator is shown for this device:

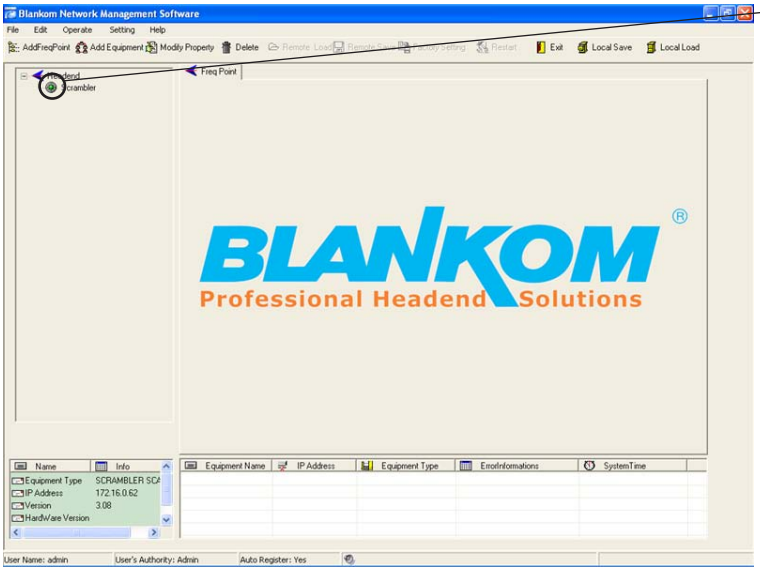
Blankom Network Management Software
File Edit Operate Setting Help
AddFreqPoint Add Equipment Modify Property Delete Remote Load Remote Save Reply Setting Restart Exit Local Save Local Load
Freq Point
BLANKOM
Professional Headend Solutions
Name Info
Equipment Type SCRAMBLER SCA
IP Address 172.16.0.62
Version 3.08
HardWare Version
Equipment Name IP Address Equipment Type ErrorInformations SystemTime
User Name: admin
User's Authority: Admin
Auto Register: Yes

Fig.40

If the NMS cannot connect with the scrambler through the IP address given, then the following screen will be shown where a red indicator is shown for this device.

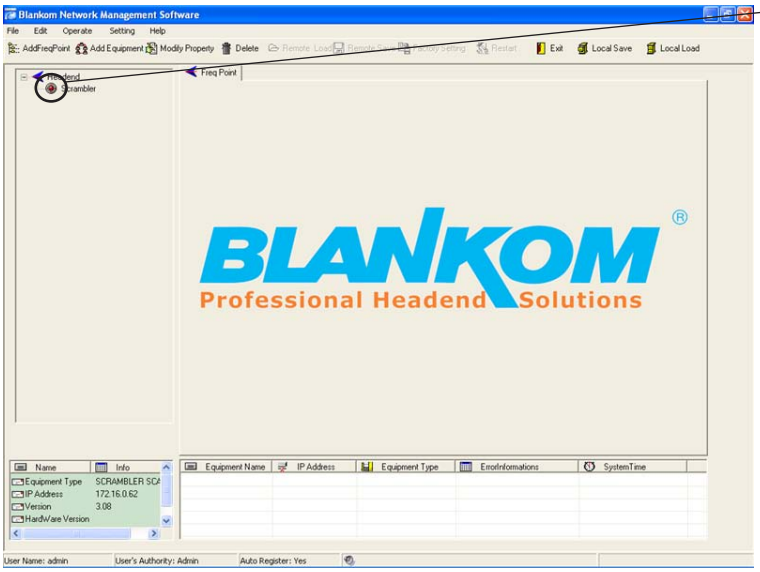
Blankom Network Management Software
File Edit Operate Setting Help
AddFreqPoint Add Equipment Modify Property Delete Remote Load Remote Save Reply Setting Restart Exit Local Save Local Load
Freq Point
BLANKOM
Professional Headend Solutions
Name Info
Equipment Type SCRAMBLER SCA
IP Address 172.16.0.62
Version 3.08
HardWare Version
Equipment Name IP Address Equipment Type ErrorInformations SystemTime
User Name: admin
User's Authority: Admin
Auto Register: Yes

Fig. 41

If problems occur with the implementation of the device on the network, please contact your administrator.

4.2 Modify scrambler settings

Select the scrambler that is required to be modified and then select the “Modify Property“ option (see 2.5.2 and 2.6). A menu similar to the following will be shown, including the various settings for the selected scrambler:

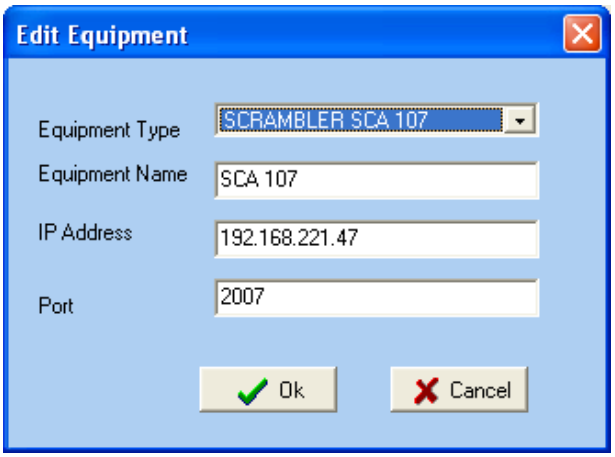

Fig. 42

Modify the settings as required and then select the “OK“ button. The modified settings will now be saved.

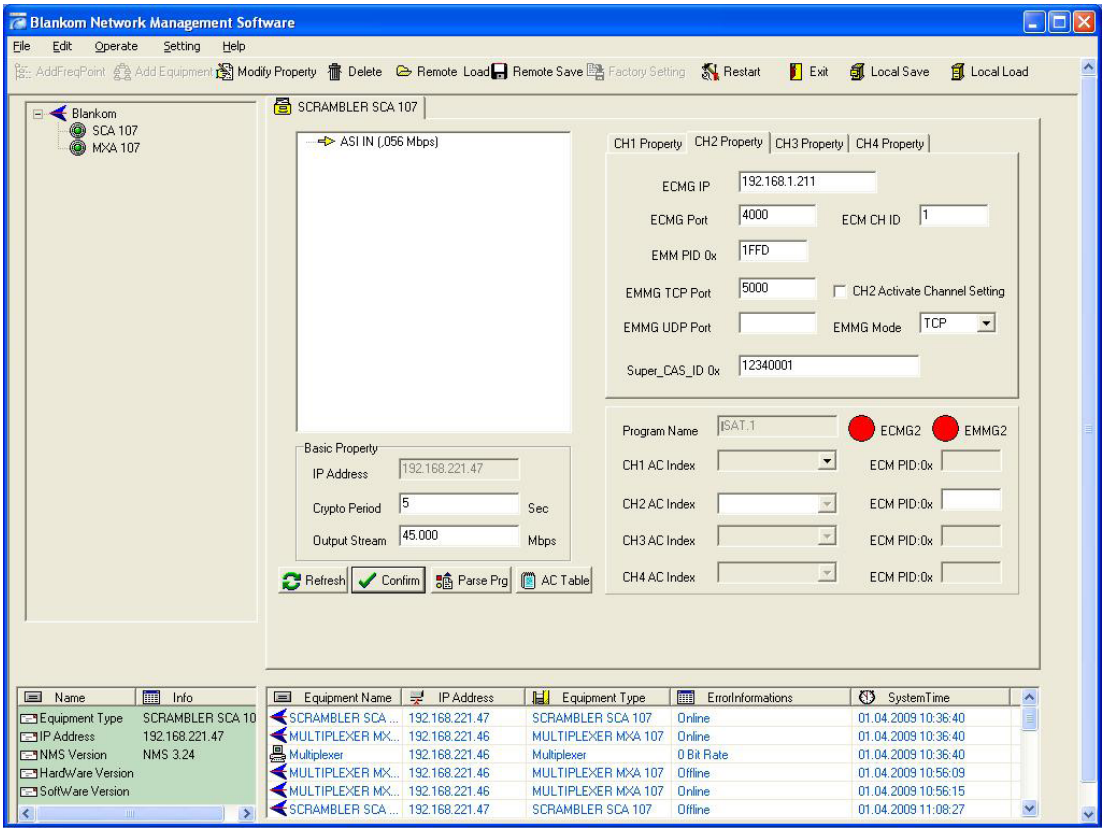
Blankom Network Management Software
File Edit Operate Setting Help
AddFreqPoint Add Equipment Modify Property Delete Remote Load Remote Save Factory Setting Restart Exit Local Save Local Load
Blankom
SCA 107
MXA 107
SCRAMBLER SCA 107
ASI IN (.056 Mbps)
CH1 Property CH2 Property CH3 Property CH4 Property
ECMG IP 192.168.1.211
ECMG Port 4000
ECM CH ID 1
EMM PID 0x 1FFD
EMMG TCP Port 5000
CH2 Activate Channel Setting
EMMG UDP Port
EMMG Mode TCP
Super_CAS_ID 0x 12340001
Basic Property
IP Address 192.168.221.47
Crypto Period 5 Sec
Output Stream 45.000 Mbps
Program Name ISAT.1
ECMG2 EMMG2
CH1 AC Index
CH2 AC Index
CH3 AC Index
CH4 AC Index
ECM PID:0x
Refresh Confirm Parse Prg AC Table
Name Info
Equipment Type SCRAMBLER SCA 10
IP Address 192.168.221.47
NMS Version NMS 3.24
HardWare Version
SoftWare Version
Equipment Name IP Address Equipment Type ErrorInformations SystemTime
SCRAMBLER SCA ... 192.168.221.47 SCRAMBLER SCA 107 Online 01.04.2009 10:36:40
MULTIPLEXER MX... 192.168.221.46 MULTIPLEXER MXA 107 Online 01.04.2009 10:36:40
Multiplexer 192.168.221.46 Multiplexer 0 Bit Rate 01.04.2009 10:36:40
MULTIPLEXER MX... 192.168.221.46 MULTIPLEXER MXA 107 Offline 01.04.2009 10:56:09
MULTIPLEXER MX... 192.168.221.46 MULTIPLEXER MXA 107 Online 01.04.2009 10:56:15
SCRAMBLER SCA ... 192.168.221.47 SCRAMBLER SCA 107 Offline 01.04.2009 11:08:27

Abb. 43

“Refresh“ button → load parameters from the scrambler
“Confirm“ button → parameters transferred to the scrambler
“ParsePrg“ button → transport stream read
“AC Table“ → access criterias define

4.3 ASI IN section

First, all programs of the data stream to be read by clicking the “Parse Prg“ button.
ASI IN → The programs of the incoming transport stream are shown.

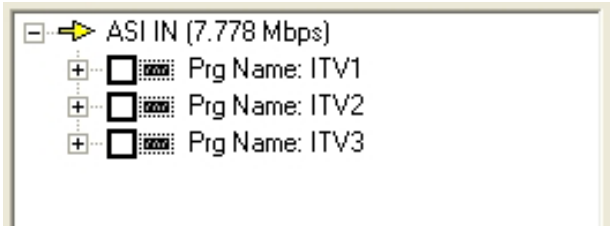

Fig. 44

Each input program can be expanded to show all the associated PID details.

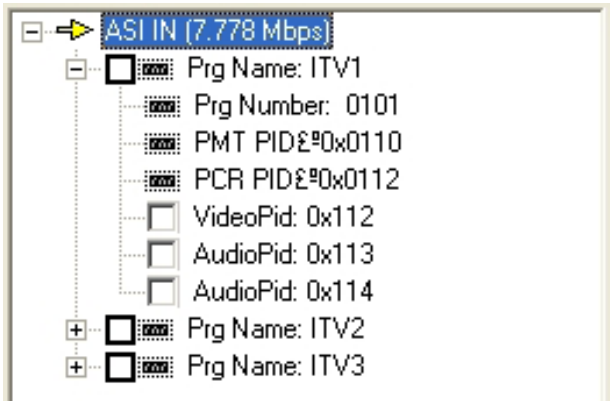

Fig. 45

4.4 Scrambling a program

Select the program that is required to be scrambled. Select the box beside the “Prg Name“ section and ensure that a tick is shown in this box. A menu similar to the following will now be shown.

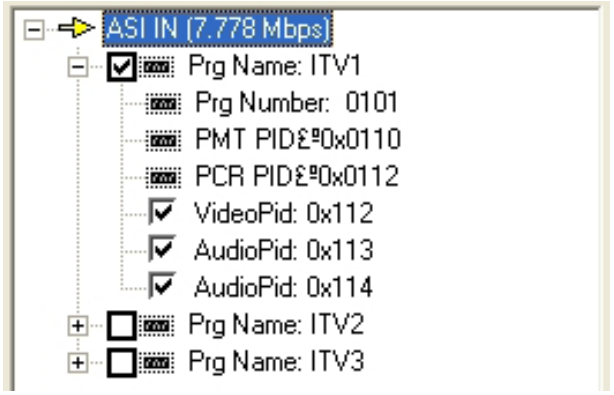

Fig. 46

4.5 Scrambling a specific PID from a program

Select the program that includes the PID that is required to be scrambled. Select the box beside the “Prg Name“ section and ensure that a tick is shown in this box. Deselect the various PID’s that are not required to be scrambled. A menu similar to the following will now be shown:

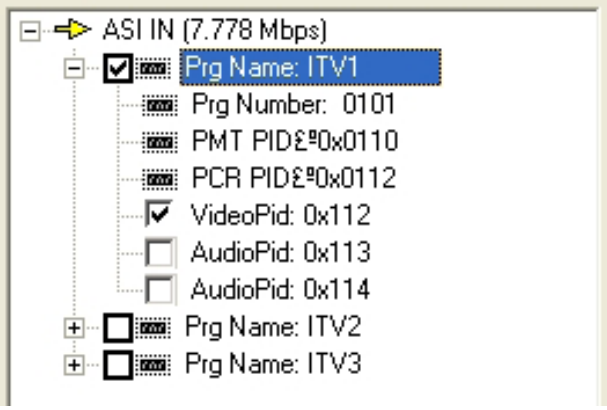

Fig. 47

4.6 AC selection section

In the AC selection section of the application, select the appropriate package scrambling that is required for this program and the unique ECM PID that is to be used for this program. The ECMG- and EMMG display describes the communication between the respective generator and the scrambler. If all settings are correctly, the displays illuminate green.

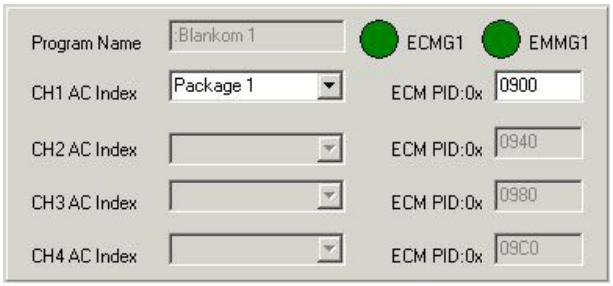

Fig. 48

Select the “Confirm“ button and then select the “Remote Save“ option to upload these settings to the scrambler.

Parameter	Description
Program Name	Displays the name of the program selected
CH AC Index	Displays the package name of the AC data used to scramble the program
ECM PID	Displays the PID used for the ECM (unique per program)

4.7 Basic property section

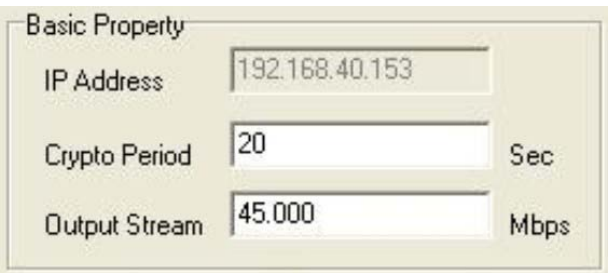

Fig. 49

Parameter	Description	Default
IP Address	IP address of the selected scrambler	192.168.2.90
Crypto Period	Period between crypto events	5
Output Stream	Bit rate for scrambler output. Any unused bandwidth will be filled with null packets.	38

Note: If any parameters are changed, select the 'Confirm' button and then select the "Remote Save" option to upload these settings to the scrambler.

4.8 Channel property section

Its possible to encrypt a service multiple with different systems. Up to 4 encryption systems can be activated.

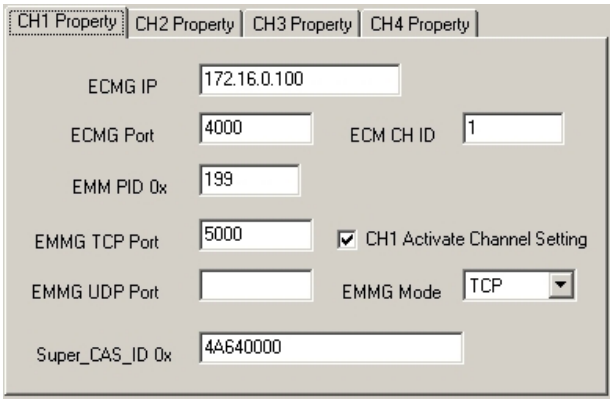

Fig. 50

Parameter	Description	Default
ECMG IP	IP address of ECMG server	
ECMG Port	Port used by ECMG server	
ECM CH ID	Channel ID for ECM	1
EMM PID	PID for EMM (unique per stream)	
EMMG TCP Port	Port for EMM (unique per stream)	
CH1 Activate Channel Setting	Tick to activate	
EMMG UDP Port	Port for EMM (unique per stream)	
EMMG Mode	Communication mode used for EMMG	TCP
Super_CAS_ID	Provided by CAS server	

Note: If any parameters are changed, select the 'Confirm' button and then select the 'Remote Save' option to upload these settings to the scrambler.

5. Glossary

ASI	**A**synchronous **S**erial **I**nterface
AC	**A**ccess **C**ontrol
CAS	**C**onditional **A**ccess **S**ystem
CH	**Ch**annel
DVB	**D**igital **V**ideo **B**roadcast
ECM	**E**ntitled **C**ontrol **M**essage
ECMG	**E**ntitled **C**ontrol **M**essage **G**enerator
EIT	**E**vent **I**nformation **T**able
EMM	**E**ntitled **M**anagement **M**essage
EMMG	**E**ntitled **M**anagement **M**essage **G**enerator
ID	**Id**entifier
IP	**I**nternet **P**rotocol
NIT	**N**etwork **I**nformation **T**able
NMS	**N**etwork **M**anagement **S**oftware
PCR	**P**rogram **C**lock **R**eference
PID	**P**acket **I**dentifier
PMT	**P**rogram **M**ap **T**able
PSI	**P**rogram **S**pecific **I**nformation
SDT	**S**ervice **D**escription **T**able
TCP/ IP	**T**ransmission **C**ontrol **P**rotocol/ **I**nternet **P**rotocol
TS	**T**ransport **S**tream
UDP	**U**ser **D**atagram **P**rotocol

6. Document history

Version	Datum	Modifikation	Author
1.00	15.07.2009	Basisdokument	Rudolph
1.01	11.10.2011	Addition MXA 108	Häußer

Options available upon request! Subjects to changes due to technical progress.